"An Economic Analysis of Agro-Processing Industries in Himachal Pradesh"

A SYNOPSIS

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1.1 INTRODUCTION

Agro-processing is now regarded as the sunrise sector of the Indian economy in view of its large potential for growth and likely socio economic impact specifically on employment and income generation.

Agro processing could be defined as set of techno economic activities carried out for conservation and handling of agricultural produce and to make it usable as food, feed, fibre, fuel or industrial raw material. Hence, the scope of the agro-processing industry encompasses all operations from the stage of harvest till the material reaches the end users in the desired form, packaging, quantity, quality and price. Ancient Indian scriptures contain vivid account of the post-harvest and processing practices for preservation and processing of agricultural produce for food and medicinal uses.

Agro-processing activities comprise two major categories; primary and secondary operations. Primary processing operations involve activities such as crop drying, shelling/threshing, cleaning, grading, and packaging. These activities are mainly carried out at the farm and only transform the commodity into a slightly different form prior to storage, marketing or further processing. Secondary processing operations entail increasing nutritional or market value of the commodity and the physical form or appearance of the commodity is often totally changed from the original. Some examples of secondary processing are milling grain into flour, grinding groundnuts into peanut butter, pressing oil out of vegetable seeds, pressing juice out of fruit, making cheese out of milk and manufacturing of mincemeat. Depending on type of commodity, equipment needed for primary processing is completely different from that used in secondary processing or major adjustments/modifications need to be done to suit either.

Inadequate attention to the agro-processing sector in the past put both the producer and the consumer at a disadvantage and it also hurt the economy of the Country.

1.1.1 Agro-Industry

Conventionally an ago-industry is an enterprise that processes agricultural raw materials. However, in the context of modem technological advance and diversification in the field of ago-based activities, it is rather obsolete to confine agro-industry to the area of agro-processing alone. The agro-industry should encompass not

only the activities that consume agricultural raw materials, but also those that seek to provide input for modern agronomic practices.

In view of this, In India, the term agro-industry is often used in a broad sense. The National Council of Applied Economic Research had defined ago-industries as those, which use either agricultural raw materials or make things that farmers need for agricultural purposes.

According to Gupta, the concept of agro-industries is confined only to those industries that are engaged in the processing of agricultural produce either for consumption or for the use of industry and those industries which produce inputs for agriculture such as fertilizers and farm implements.

Jain has defined agro-industry as one which carry out the processing of farm produce and which provides inputs for the developments of agriculture. He holds that development of agriculture in modern times is marked by the growth of ago-industries which on the one hand provide machine and material needed for achieving higher agricultural yields and on the other process farm produce into the finished and semi-finished goods.

Planning Commission of India had set forth the following criteria for distinguishing the agro-industries. The industries which satisfy the criteria are those which (1) encourage greater input in to agriculture, (2) lead to better processing and conversion of agricultural commodities, (3) ensure high returns on processed goods and (4) increase agricultural production. Obviously planning commission has included under agro-industries not only those industries which are concerned with the processing of agricultural products but also such industries which are involved in the production of farm inputs and farm implements.

Thus, it can be concluded from the above views expressed on agro-industries that the terms ago-industry encompasses not only the activities that consume agricultural raw materials but also those that seek to provide inputs for modem agronomic practices. In general agro-industries may he define as such industries which make direct use of the agricultural produce as raw materials on the one hand and supply inputs to agriculture on the other. Thus they are directly related to inputs and outputs of agriculture. Based on the type of link the industry has with input and output of agriculture, ago-industries can be of two types-(1) processing industries and (2) supply industries. Processing Industries process agricultural produce for their further use while supply industries are those which produce inputs for agriculture. These agro-industries recognize the

complementarity of agriculture and industry and that output of agriculture serves as the input of industry and vice versa. Thus they signify the proximity and affinity between agriculture and industry.

Agro processing sector has experienced expansion during last 5 decades, starting with a handful of facilities which were mainly operating at domestic/cottage level.

Properly developed, agro-processing sector can make India a major player at the global level for marketing and supply of processed food, feed and a wide range of other plant and animal products.

Global market for the processed foods follows the economic power of the countries. Developed economies show more inclination towards processed foods due to higher income levels. Rapid urbanization and rising income levels in the developing economies create the demand for processing foods. Low income levels and poor economic growth of the least developed countries create the demand for basic staples and carbohydrates

1.2 REVIEW OF LITERATURE

Agro-processing industries are of growing importance in the economics of developing countries. They provide an essential link between production and marketing, between rural and urban areas, between owners of capital and labour, and between producers and consumers of industrial and agricultural products.

Further they utilize local tools and materials, provide employment opportunities and prevent migration of rural youth to urban areas. They absorb surplus agricultural labour, raise the level of income of rural people and help eradicate growing poverty. They also help elimination of exploitation of agriculturists by traders and middle men, pave the way for self-reliant villages, and check drain of foreign exchange. Besides bringing growth and correct regional imbalances, they provide an important link between agriculture and industry. Ago-processing industries also bring harmonious and integrated socio-economic order in a country's economy, promote social cohesion and unity in the rural areas, and operate as catalytic agents for development of infrastructure. In addition to these, they effectively utilize leisure of agricultural families, provide subsidiary income to our land less and marginal farmers, facilitate

spatial distribution of industries. They also offer a viable field for promoting occupational diversification in villages through supplementary occupation.

In view of its role in the economic development of a country, many have attempted to study various aspects of ago-processing industries. Therefore a brief review of such studies is necessary to identify various issues and research gaps for the present study. The review of literature made here has been presented as follows.

1.2.1 Studies related to agro-processing industries in other countries and

1.2.2 Studies related to agro-processing industries in India.

1.2.1 Studies Related to Agro-Processing Industries in Other Countries

- In a study "Supply Response and Investment in the Canadian Food Processing Industry", Lopez (1985), concluded that food processing industry constitutes a major direct market for the domestic farm sector and hence the dynamism of apiculture depends on development in the food processing industry.
- In a study "Material Productivity in Food Manufacturing", Adelaja (1992), holds that material inputs account for over 60 per cent of the cost of manufacturing food products in the United States. Hence food manufacturing is more material intensive than most other manufacturing sectors.
- Dietz and Matee's (2000), study on "Assessment of the Small Scale Food Processing Sub Sector in Tanzania and Uganda" examines constrains faced by small scale food processing industries in these countries. The study finds that it is constrained by lack of access to capital and information, limited choice of technologies and poor technical and managerial skills. Approaches for improving productivity and competitiveness are also discussed in the study.
- In a study "Small Scale Food Processing in Mozambique, South Africa and Zambia, Atkinson and Cardosa (2000), highlighted the potential contribution of small scale food enterprises to the economies of these countries, and discuss the constraints such enterprises face including poor access to finance and unfavourable infrastructural and regulatory environments.

1.2.2 Studies Related to Agro-Processing Industries in India

The review of studies made in India has been organized into

a) Macro level studies related to agro-processing industries at the national level,
b) Industry specific studies (micro level) studies related to agro-processing industries at the national level,
c) Macro level studies related to agro-processing industries at the states level,
d) District or local level studies both at the macro and micro levels,

1.2.2 a) Macro Level Studies at the National Level

- Dhawn's (1969), study of "Location of Agro-Processing Industries-Case Study of 'Fruits and Vegetable" has examined the location of fruit and vegetable processing industries in India. He observes in the study that most of the fruits & vegetable processing industries are located in big cities with population more than one lakh.
- In a study (1989), "Importance of Agro-Processing Industry in Diversification of Agriculture in India" Singh and Rai have analyzed the failure of capital oriented and centralized ago- based industry in India in stimulating agricultural development and raising the standard of living of the people of rural population and the enormous loss of centralized urban based agro-industry during post-harvest period in production areas. For solving this problem, the study has emphasized some of the aspects of diversification oriented towards horizontal, vertical and regional interaction of farming and its possible effect on prices, adoption of new technology and profits for any crop. In order to reduce post-harvest loss of agricultural commodities, the study suggests that the processing industries must be established in the production areas of agricultural products within the formal and informal sector which would create the potential for labour absorption and alleviate poverty and unemployment in India.
- Srivastava's (1989), study "Agro-Processing Industries: Potential, Constrains and Task Ahead" analyzed the profile .and trends in the growth of agro-processing industries and identified constrains of agro-processing industries. It is also observed in the study that substantial portion of net value added from

the agro-industry is derived from unregistered and cottage scale units. Further it is observed that bulk of the ago- processing industries are very snlall and that fixed capital investment per factory is vary less as compared to fixed capital investment per factory in the non-agro-based industries, and working capital employed is more as compared in non-agro-industries and capital labour ratio is less in the agro based industries as compared in non-agro-based industries indicating the labour intensive character of the agro-based industries. The study identifies following constraints-inadequacy and suitability of raw materials, underutilization of the exiting capacity, obsolete processing technology and consequent sub optimal yields, energy over utilization, lack of scale economies in production, and increased marketing costs, larger expenditure on market development, high rate of interest on working capital from commercial bank, high tax on processed products.

- Desai, Gupta & Namboodiri (1991), in their study "Food Processing Industries: Development and Financial Performance" analyzed the development and financial performance of selected food processing industries such as food grains, edible oils processing, sugar factories and dairy products industries and contributions of these industries to rural led economic development. The performance of these industries is analyzed by examining their input and factory productivity, liquidity, working capital management efficiency, solvency management efficiency, profitability, operating surplus to investment and liquidity and solvency cushion criteria. The study has shown that sustained growth in primary output of food commodities is essential for higher growth performance of the selected food processing industries.
- 'Development of Food Processing Industries", Desai, Gupta & Namboodiri (1992), have analyzed development and financial performance with reference to working capital management of selected food processing industries such as food grain milling, edible oil seed processing, sugar cane processing and milk processing and hold that food processing industries are raw material, labour and working capital intensive. The study prioritizes these industries for development on the basis of performance1 development criteria. The study finds that edible oil mills get highest priority followed by grain mills, diary product and sugar.

- Sinha & Sinha's (1992), study "Small Scale Fruit and Vegetable Processing Industries" has traced the growth of the industry, analyzed constrains and opportunities, discuss the prospects for the growth and assess the future of the industry. They have identified the following constraints faced by the industry in the study. They are poor horticultural base. a weak production system, market limitations, consumer preferences and government policies.
- Gandhi and Mani (1994),"' in their study "Agro-Processing for Development and Exports: The Importance and Pattern of Value Addition from Food Processing", attempt to analyze the magnitudes, variation and pattern in the value addition in the food processing industries using data from annual survey of industries. The study finds that net value addition from food processing industry over the total value of input is high and grown during the period of study. The extent of value addition as percentage of input differs substantially by the food industry group from over 25 per cent for cashew, coffee and fine sugar to 5-6 per cent in traditional industries like milling, edible oil and vanaspati. The study conclude that information on value addition of agro-processing industries in different sectors will be of immense help in designing investment portfolio for the development of ago- processing industries and for the promotion of ago-industries for domestic markets and exports.
- In study "Managing Food Processing Industries in India", Srivastava and Patel (1994), analyze the structure and the export performance of agro-processing industries in India, illustrate methods for technical and economic analysis, focuses on working capital and raw material management, examine specific problems in the marketing of processed food products, packaging and capacity utilization.
- In study, "Size Structure of Agro-Industry: A Linkage Analysis", Sarkar (1995), attempts to explain the size structure of agro-industry of India based on 21 group of agro-industries. The important factors used in the study to explain the size structure of agro-industry are backward linkages, raw material concentration, and size of market. The study indicates that own account enterprises (smallest size group in the unorganized sector) are disadvantageously positioned in terms of back ward I inkage, raw material

concentration index, and size of market. Their diminishing advantages are due to dispersed raw material availability and sectors where processes are difficult to standardize. Whereas the advantages of factory sector lies in terms of larger market, higher linkages and concentrated availability in raw material.

- Chadha and Sahu's (2003), study on "Small Scale Ago-Industry in India: Low Productivity is itsAchilles Heel" examines the size and performance of ago-industries in India, analyses the growth of productivity in unorganized and organized manufacturing sector in India, and examines the locational and scale advantages / disadvantages among tiny and small enterprises. The study finds that the most festering part of the Achilles' heel lies among the lowest rung of the unorganized ago-based units.
- Himanshu's (2006), study on "Ag-i Business Management: Problems and Prospects" deals with the problems and prospects and other related operational aspects involved in setting up new agru-industrial projects in India. Suggestions and policy recommendations for the growth of agro-industries in India have also been made in this study.

1.2.2 b) Industry Specific Study (Micro Level) at the National Level

- Kannan's (1983), study on the cashew processing industries have analysed the historical factors that have shaped its development and grappled with issues like the extent to which agrarian and non agrarian capital has moved in to this industry, the emergence of factory system, the determinants of employment and wages in the industry, the problems in the import front, the domestic potential of increasing production of nuts and the policy changes needed in this context.

1.2.2 c) Macro Level Studies at the State Level

- In a study "Growth and structure of the Food Processing Industry in the Punjab in the Eighties", Singh & Vyasulu (1990), has examined the growth and change in the structure of the food processing industry in Punjab. It has been found that growth has taken place in the field of primary processing of agricultural produce which has recorded growth above the state average in

both output and employment. But the secondary processing sector which contributes to higher rates of value added had not grown at a commensurate rate.

- Sharma's (1992), study “Socio-Economic Study of Agro- Industries (Effects of Infrastructural Facilities in Haryana) attempts to study the infrastructural facilities and agro-based industries and their impact on rural employment, rural income and rural wage structure in the rural areas. The efforts made by the Government to develop these facilities for the uplift of the rural economy have also been studied. Major factors responsible for the socio- economic development in the region at micro level in the state of Haryana have been identifies and studied.
- In study "Model for Agro-Industrial Development in Punjab", Kaushal (1993), has analysed the agricultural situations in Punjab. He observes in the study that Punjab agriculture is confronted by situational factors such as supply of food grains exceeds the demand for it, for small fanners agriculture is less remunerative and therefore Small marginal holdings are non-viable, educated labour force are unwilling to take up agricultural activities and they represent a net burden of the surplus population. Against this back ground the study suggest agro-industries which will solve the problems of absorbing the surplus labour force of agriculture and that of educated unemployed youth, and can prevent the small farmers from giving up agriculture, can check migration from rural to urban centres and thus lessens the pressure on congested urban areas.
- In study "Ago-Industries for Diversified Growth and Employment", after presenting scenario of ago-processing in India, Singh (1993), discusses the problem of Punjab agriculture. He observes that though Punjab agriculture is at an advanced stage, its production is growing at low rate, cost of production is increasing, and consequently returns of the farmers are falling. Cropping pattern in the state dominated by paddy-wheat rotation caused scarcity of water resources in the state. The study further observes that most of the educated youth of the state is tied up in the agriculture sector at very low level of poverty. In the text, he observes that development of ago-processing

industries can offer a viable solution to the problems of Punjab agriculture in particular and economic problems of the state in particular.

- Gupta's (1993), study "Development of Agro-Industries-Problems and prospects" investigate the growth, problems and prospects of agro-industries. it further examines their impact on agricultural development wi th reference to the economy of Bihar. The study finds that with regard to the pattern and composition of different type of agro industries, there has been a definite shift in favor of manufacturing of textile products, leather products and beverages, tobacco and tobacco products. Further the study identified the following problems faced by agro-industries in Bihar-lack of adequate capital, irregular supply of raw materials, lack of adequate working capital and demand, competition from organized sector industries, prevalence of traditional and obsolete technology etc,
- In study "Role of Agro-Based Industries in the Industrial Development in the State of Madhya Pradesh", Baghel and Pendse (1996), examine the role of agro- industries in the industrial districts of Madhya Pradesh. The study observes that Mad h ya Pradesh being an agricultural based economy, development of the industries largely depends up on the development of agro-industry. The study has also analyzed the industrial scenario of the state in terms of agro-based industries and concludes that ago-industries play an important role in the economic development of the state in terms of increase in investment and generation of employment.
- Chahal and Singh's study (1999), "Impact of Establishing Agro-Processing Industries on Income and Employment of Farmers in Punjab examined the impact of agro-processing industries in Punjab on income, employment, cropping pattern and on farm investment in the context of specific cropping pattern in Punjab agriculture. In the study they observe that cropping pattern in Punjab agriculture mainly revolve around wheat and paddy production which has reached peak level. 1n order to solve this problem, they further observe that a shift in cropping pattern in favor of fruits and vegetable is necessary to diversify Punjab agriculture. The success of such agriculture diversification depends on setting up of a net work of agro-processing units to provide value added products. The study has also shown that with setting up of an agro-

processing industry, the cropping pattern of an area undergo a change, thereby affecting the income and employment pattern of the farmers.

1.2.2 d) District or Local Level Studies

- In study "Economics of Agro-Processing-A case study of Jaggery Production and Marketing in East Godavaari district of Andhra Pradesh, Pradesh. The study has revealed that jaggery preparation was more profitable Raju and Ramesh (1989), attempted to analyze costs and returns of jaggery production and marketing in East Godavaari district of Andhra in the study area than selling cane to sugar factories.
- Verma's (1989), study "Economics of Processing and Marketing of Gur in District of Indore, Madhya Pradesh" have analysed the economics, productivity and profitability and producer share in the consumer's price. The study has revealed that the share of the producer in the consumer's rupee can he increased by restricting number of intermediaries and preventing illegal unauthorized deductions by eliminating a large number of intermediaries.
- Chatterjee and Datta's (1989), study "Employment Potentiality of Women and Children in Agro-Processing and Allied Activities" examine the prospects of development of market for women and child labour in agro-processing and allied activities of Bankura district of West Bengal. The study has shown that agro-processing and allied activities provide excellent scope for absorption of women and child Labour force in the developing countries. In the study they have also analyzed the Bangladesh, experience of group loan for exploring the prospects for development of part time and nonstandard Labour market in the agro-processing and allied sector and have suggested development of markets for non-standard and part time Labour for women and children should be given priority in this activity.
- In study "Econometric Analysis of Sugar Industry", Reddy (1993), analyze sugar industry in Chittor district of Andhra Pradesh, using production approach and observe that sugar industry is one of the largest agro-based industries in India providing both direct and indirect employment to many and supporting many more ancillary industries. The study finds that there are no economies of large scale production in the industry, existing labour and capital

investment are underutilized and that output of sugar can be increased by using more of raw material, and that among factors relative contribution to output value, the contribution ofraw material is greater than those of both labour and capital.

- Joshi, Wadkar, Malaw and Talathi's (1999), study "Income and Employment Generation in Mango Processing Industry" conducted for Ratnagri and Sidhudirt districts of Maharashtra analyzed the cost of processing of various varieties of mango and profit margin and their effect on income and employment. The study has revealed that mango processing activity provides employment to a large number of workers particularly female workers.
- Sivakurnar, Balasubramnian and Srinivaan (1999), in their study "Growth Linkage Effects of Ago-Industrialization" conducted in Dharmapuri district of Tamil Nadu, consider ago-industrialization with strong rural urban growth linkages is an important option to absorb surplus labour. The study analyzes the linkage effects of agro industries. The study finds that the raw material procurement activities of ago-industries promoted rural to rural interaction and the export of value added products from the region promoted rural urban interaction. The study also finds that the growth of agro industries would favor growth of non-farm non-industrial activities and hence agro industrialization is regarded as a means of development strategy.
- Sehrawat, Vema and Suhag's (2000), study "Factors affecting the Economic viability of small Scale Agro-Processing Industries" examine the factors responsible for affecting the economic viability of small scale agro-processing industries based on a study conducted in four districts in Hariyana. The study revealed that production factors for establishing the small scale industrial units economically viable are suitable location of entrepreneurial units, adequate supply of power and adoption of quality control measures, sound planning, efficient implementation of project and better infrastructural facilities. Important managerial and institutional factors are cordial support and government incentives, timely supervision and guidance, sound managerial ability of entrepreneurs and provision of technical guidance and counselling. Important marketing and financial factors are ready availability of finance, identification and use of mega markets, attractive packaging of products and

selection of products based on market demand, good conduct with marketing personnel. The study further revealed that socio personal and psychological factors such as sole proprietorship of entrepreneurial units followed by commitment towards enterprises, high risk capacity, innovative behaviour and high degree of motivation.

1.3 NEED FOR STUDY

The foregoing reviews of literature examines that agro-processing sector is of great significance. The development of agro-processing industries implies the development of agriculture on one hand and the entire set of industries, linkages, and investments that cater to the demands of the masses with improving incomes and environment on the other. Planners and policy makers have regarded agro-processing sector as one with high growth potential. Therefore, this sector must be promoted extensively to bring immense benefits to the economy from agro-processing activity. To promote this sector in the right direction, a comprehensive study of the present status of this sector is needed. The present study is undertaken to meet this need.

This study assumes much significance because it provides an insight into relative significance of agro- processing industries in the manufacturing sector, its relative position in the agro-processing sector of India, structure, features, growth performance, productivity and sources of growth performance.

The study will also provide an insight into the working, problems and farm-industry linkages of agro-processing industries of Himachal Pradesh. The present study has also relevance because it makes an attempt to identify agro processing industries for which the state has a comparative advantage. The findings and conclusions of the study has much relevance in helping planners and policy makers in evolving appropriate policy measures to solve the problems of agro processing industries and to promote them extensively for the benefit of the state.

The development of agro-processing industries implies the development of agriculture on one hand and the entire set of industries, linkages, and investments that cater to the demands of the masses with improving incomes

and environment on the other. It creates space for improving farm-industry linkages. It also has great export potential. Agro-processing industries facilitate transmission of an industrial culture in rural areas and thereby bring about modernization and innovation in agriculture, and development of rural entrepreneurship. Thus, stimulating value added activities that build on production of agriculture is a necessary condition for improving the living standards among rural population in the developing.

India with 2.5 per cent of global area, supporting 16.7 per cent of world population produces 22.4 per cent of world paddy production, 11.7 per cent of wheat, 15.00 per cent of rapeseed, 7.70 per cent of potato, 24.60 per cent of sugarcane, 43.30 per cent of jute and 27.28 per cent of pulses produced globally. In the current scenario, India contributes 10.30 per cent and 9.20 per cent to the global production of fruits and vegetables respectively. Moreover, in spite of strong base in horticultural products very negligible per cent of fruits and 0.5 per cent of vegetables are processed as against 70.00 per cent in Brazil. Moreover, India losses over 30.00 per cent of its produce of fruits and vegetables annually in the absence of proper infrastructural facilities. Agro-processing industries have, thus, vast potential in India.

1.4 OBJECTIVES

The objectives of the proposed study:

1. To evaluate the status of agro processing industries in India with special reference to Himachal Pradesh.
2. To study the economics of small, medium and large scale agro processing industries in Himachal Pradesh.
3. To identify the obstacles faced by agro processing industries.
4. To evaluate the policy directives in respect of agro processing industries in India.
5. To analyse both forward and backward linkages for agro processing industries in Himachal Pradesh.
6. To make suggestions and recommendations for development of India's Agro Processing Industry.

1.5 METHODOLOGY

The study would cover an in-depth economic analysis of agro processing industries with the view to identify existing and future potential and the methodology proposed is as under:

1.5.1 Time Period

Consistency of data pertaining to agro processing industries in India mandates that the time period under investigation be 1990 – 2008 which will be further divided into two sub periods viz. Sub Period I (1990-1999) and Sub Period II (2000-2008) to facilitate decadal appraisal of performance. 1990 has been taken as a starting point because consistent data is available in time series since then.

Data/information on agro processing industries for previous decades is scanty and inconsistent as confirmed by review of literature. However, data pertaining to previous decades will be utilized as per availability and the same will be reported as deemed appropriate.

1.5.2 Data Sources

1.5.2 a) Secondary Data

The proposed study will rely largely on secondary sources. Exhaustive collection of secondary data to be undertaken from published information such as state profiles, reports, abstracts, internet, publications of APEDA, MOFPI and other sources.

1.5.3 b) Primary Data

To examine the working of agro-processing industries data pertaining to socio economic characteristic of agro-processing entrepreneurs, organizations, number of work days, capital structure, output, employment, cost structure, source of raw materials, marketing and price fixation will be generated in reference to Himachal Pradesh.

For the purpose of seeking explanations/clarifications etc. primary data/information will also be generated through interviews with relevant agro processing organizations and experts/leaders in the agro processing industry.

1.5.3 Sampling

Himachal Pradesh is predominantly an agricultural state with 92 % of its population living in rural areas. The average size of the holding is 1.5 hectares which because of mountainous topography is quite uneconomical.

Horticulture holds the key for economic development of the state. High profitability from fruits has induced 26.8 % shift of area from field crops and 22.6 % shift of area from barren and other wasteland in favour of fruits. Himachal Pradesh's four agro-climatic zones provide suitable conditions for growing subtropical and temperate fruits. The area under fruits, which was 792 hectares in 1950-51 with total production of 1200 tonnes increased to 2,14,574 hectares during 2011-12. The total fruit production in 2011-12 was 3.73 lakh tonnes, which during 2012-13 (upto December, 2012)

As the above facts shows that Himachal Pradesh is pre-dominated by horticulture and agriculture so accordingly study will be covering Fruits and Vegetables processing industry mainly.

Himachal Pradesh is divided into Four Agro Climatic Zones:

1. SHIVALIK HILL ZONE: Climate Sub Tropical, consists of foothills and valley area from 350 to 650 meters above mean sea level. It occupies about 35% of the geographical area and about 40% of the cultivated area of the State. The major crops grown in this Zone are Wheat, Maize, Paddy, Gram, Sugarcane, Mustard, Potato, Citrus, Mango, Litchi, Guava, deciduous forest, dry deciduous shrubs, Vegetables, oilseeds, Barley etc.

2. MID HILL ZONE: This zone extends from 651 meters to 1,800 meters above mean sea level. Having mild temperate climate. It occupies about 32% of the total geographical area and about 37% of the cultivated area of the State. The

major crops are Wheat, Maize, Barley, Black Gram, Beans, Paddy etc. This zone has very good potential for the cultivation of cash crops like Off-Season Vegetables, Ginger and production of quality seeds of temperate vegetables like Cauliflower and root crops.

3. HIGH HILL ZONE: It lies from 1,801 to 2,200 meters above sea level with humid temperate climate and alpine pastures. This zone covers about 35% of the geographical areas and about 21% of the cultivated area of the State. The commonly grown crops are Wheat, Barley, Lesser Millets, Pseudo-cereals (Buckwheat), Maize, Potato, Oilseeds, Pulses, Rajmash, Soybean, Barley, Bee keeping, Apple, Pear, Plum, Peach, Apricot, chestnut, Vegetables etc. The area is ideally suited for the production of quality seed Potato and temperate Vegetables. This zone possesses good pastures and meadows.

4. COLD DRY ZONE: It Comprises of Lahaul-Spiti and Kinnaur Districts and Pangi Tehsil of Chamba District lying about 2,200 meters above mean sea level. It occupies about 8% of the geographical and 2% of the total cultivated area of the State. The major crops grown are Wheat, Barley, Pseudo-cereals like Buck wheat, Maize, Pulses, Potatoes, Minor millets, Kutheris, Hops, Kumin, saffron, Apples, Nuts, Dry fruits, Chilgoza, Neoza pine. It is ideally suited for the production of quality Seed Potato, temperate and European type of Vegetables and their Seeds, Seed Potato, Peas as green and seed purposes.

To fulfil the objectives data pertaining to only registered agro processing industries in the state will be considered for the present study. Un-registered agro processing industries will not be considered for the present study. Individual firm will be identified on the basis of random sampling. 10 per cent industries from food as well as non-food processing category for each scale of operations i.e. small, medium and large scale will constitute the sample. This sample will be proportionately drawn from the four agro-climatic zones.

Further in reference to the second objective the Apple Processing Industry has been purposively identified for investigation.

1.5.4 Tools of Analysis

1.5.4 a) SWOT Analysis of agro processing industry in India will be undertaken.

1.5.4 b) Regression analysis will be carried out for forecasting and predicting future trends in agro processing sector. The basic form being:

$$Y_t = a + b\ X_{ti} + e$$

1.5.4 c) Exponential growth rates will be computed and the variables under study will include real gross value added, real gross fixed capital stock, labour productivity, capital intensity, capital productivity, and total factor productivity.

1.5.4 d) Factor Analysis will also be attempted to identify major factors affecting the growth of agro processing industries in Himachal Pradesh. Initial identified factors for the growth of agro processing industries are easy access to raw material, access to manpower, government financing, access to market, tax incentives, personal factors and others.

1.5.4 e) Graphs & Flow Diagrams will also be generated.

1.6 EXPECTED OUTCOME

The study along with technical analysis should provide bankable information with recommendations and suggestions that can be pursued further for comparative and competitive advantages for agro processing industries in Himachal Pradesh.
The study should also provide thrust areas for achieving greater role of this sector in the national economy in the future.

1.7 TENTATIVE CHAPTER SCHEME

The present study will be tentatively divided into eight chapters.

First Chapter will be the Introduction.

Second chapter will deal with terms such as agribusiness, agro-industries, agro based industries and agro- processing industries. It also report the review of literature on agro-processing industries.

Third chapter will detail the statement of the problems, objectives, significance, scope and methodology.

Fourth chapter will be dealing growth and pattern of agro-processing industries in Himachal Pradesh.

Fifth chapter will be based on the export potential of Agro based products from India and its share in Global Industries.

Sixth chapter will deal with the SWOT analysis. Sixth chapter will study the policy directives in respect to agro-processing industries in India.

Seventh Chapter will focus on thrust areas for future for achieving greater role of this sector in the national economy.

Eighth chapter will deal with the major findings of the study and conclusions drawn.

1.8 REFERENCES

- Bandarla, Amarnath., (1992), Problems of agro-based industries. Khadi Gram Udyog 35 (5):183-187.

- Chadha, S. K., (1999), "Prospects of Agro Food Processed Industries", Political Economy Journal of India, Vol. 8, Nos. 3 and 4, pp. 124-131.

- Chengappa, P.G., (2004), Emerging trends in agro processing in India. Indian Journal of Agricultural Economics, 59(1): 55-74.

- Chintala, M., (2008), Food Processing: The Rising Indian Industry, http://www.indianmba.com/Faculty_Column/FC712/fc712.html as seen on 4/2/2011.

- Jairath, M. S., (1996), Agro-processing and infrastructure development in hilly area: A Case study of fruit and vegetables processing.

- Indian Journal of Agri. Marketing. 10 (2): 28-46.

- Malliswari, M. N, (1996), Mango Processing in Andhra Pradesh. Potentials, infrastructure and constraints. Indian Journal Agri. Marketing 10 (2): 19.

- Sharma, K .D., Pathania, M.S. and Vashist, G.D., (2003), Role of rural women in small-scale agro-processing sector – An economic analysis of Samridhi Mahila Processing Cooperative Society in Himachal Pradesh. Indian Journal of Agricultural Economics, 58(3): 577-588.

- Sidhu, M.S., (2005), Fruit and vegetable processing industry in India – An appraisal of the post reform period. *Economic and Political Weekly, July 9: 3056-3061.*

- Singh, Anil and Partap, (1987), Diagnosis and Treating Industrial Sickness. *Yojana*. 31 (12) : 12-13.

- Srivastava, U.K., (1989), Agro-processing industries: Potential, constraints and task ahead. *Indian Journal of Agricultural Economics, 44(3): 242-256.*

- Tripathy, K.K. (2006) Processed food industry in India —Potentials and Constraints, 54(6): 12-16.